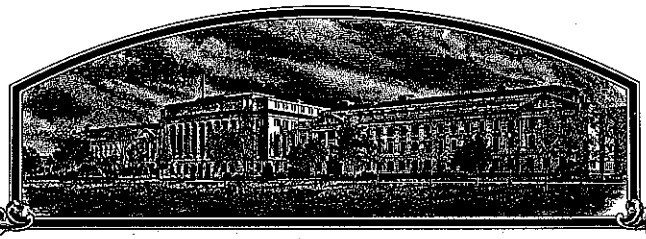

No. 9000204

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Wisconsin Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF Eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT TY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

PLANT VARIETY PROTECTION OFFICE
DEPARTMENT OF AGRICULTURE

BARLEY

'Chilton'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 29th day of October in the year of our Lord one thousand nine hundred and ninety-three.

Attest:

Kenneth A. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Mike Espy
Secretary of Agriculture

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
Wisconsin Agricultural Experiment Station
M.A. Brinkman, authorized agent

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.
X2944-4

3. VARIETY NAME
Chilton

4. ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*
Agriculture Hall
University of Wisconsin-Madison
Madison, WI 53706

5. PHONE *(include area code)*
(608) 262-1390

FOR OFFICIAL USE ONLY

PVPO NUMBER
9000204

FILING
Date: June 8, 1990
Time: ☐ A.M. ☐ P.M.

FEES RECEIVED
Filing and Examination Fee: $ 2150
Date: June 8, 1990
Certificate Fee: $ 250
Date: Oct. 21, 1993

6. GENUS AND SPECIES NAME
Hordeum vulgare L.

7. FAMILY NAME *(Botanical)*
Gramineae

8. CROP KIND NAME *(Common Name)*
Spring barley

9. DATE OF DETERMINATION
February 16, 1990

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Wisconsin Agricultural Experiment Station

11. IF INCORPORATED, GIVE STATE OF INCORPORATION

12. DATE OF INCORPORATION

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Dr. Marshall A. Brinkman, Department of Agronomy
University of Wisconsin-Madison, 1575 Linden Drive
Madison, WI 53706

GT per phone call 4 Dec 1992 Dr. Bob Ferfbery AAA

PHONE *(Include area code)*: (608) 262-1390

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*

a. ☒ Exhibit A, Origin and Breeding History of the Variety
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety.
d. ☒ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____
g. ☒ Filing and Examination Fee ($2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act.)*
☒ YES *(If "YES," answer items 16 and 17 below)* ☐ NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☒ FOUNDATION ☐ REGISTERED ☒ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES *(If "YES," through* ☐ Plant Variety Protection Act ☐ Patent Act. Give date. _____ *)*
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☒ YES (If "YES," give names of countries and dates)
☐ NO
Released to Certified Seed growers on February 16, 1990

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
Marshall A. Brinkman	Professor/Agent	May 30, 1990
SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE

9000204

EXHIBIT A: ORIGIN AND BREEDING HISTORY OF THE VARIETY

CHILTON SPRING BARLEY (Wisconsin selection X2944-4, PI537967)

Chilton was developed by workers in the Department of Agronomy, University of Wisconsin-Madison, Madison, Wisconsin. The pedigree of Chilton barley is X2040-1/X1947-2//Morex. The chronology of crosses which give rise to X2040-1 and X1947-2 is presented on page 2. Chilton was developed via pedigree breeding from a three-way cross, with the final cross consisting of Morex as a male crossed onto an F_1 plant from an X2040-1/X1947-2 cross. The final cross was made in a winter greenhouse at Madison, Wisconsin in February, 1977. The chronology of progeny generations which resulted in the release of Chilton is as follows:

Year	Disposition
1977	F_1 generation grown as R17404 in the field nursery at Madison
1978	R7659 (F_2)
1979	Head Row 4848 (F_3)
1980	HR5254 (F_4)
1981	HR30827 (F_5)
1982	HR4098 (F_6) Plants in this row were harvested in bulk and were designated X2944-4.
1983	R867 Entered in a 3-replicate preliminary trial at Madison
1984	Entered in the Rod Row Yield Trial at Madison. The nursery was harvested for seed increase only due to severe soil compaction problems during emergence.
1985	X2944-4 Performed very well in the Rod Row Yield Trial at Madison
1986-89	Entered in statewide yield trials each year. Entered in the Arlington drill plot performance trials in 1987-89, and in the Mississippi Valley Barley Nursery (Uniform) in 1988-89.

The primary selection criteria in the F_2 nursery and in the F_3, F_4, F_5, and F_6 head rows were productive appearance, stiff straw, early maturity, attractive kernel conformation, and resistance/tolerance to diseases.

X2944-4 performed very well in its first preliminary yield trial (triplicate nursery in 1983) at Madison, so it was promoted to the main 4-replicate performance trial (Rod Row Yield Trial) at Madison in 1984. A three-inch rain immediately after planting resulted in severe soil compaction problems and very poor stands, so the 1984 season provided only a seed increase. The 1985 Rod Row Yield Trial provided some of the highest barley yields and test weights on record at Madison. In spite of showing more susceptibility to powdery mildew than desired in the 1985 RRYT, X2944-4 performed exceptionally well, as it was high in grain yield and test weight, headed early, and had excellent straw strength. X2944-4 was subsequently tested in statewide trials in 1986-89. Despite slipping somewhat in yield in 1986, it consistently produced high test weight grain with high protein percentage throughout its statewide testing in the late 1980's. Sister line X2944-16 was included along with X2944-4 in all 1985-89 yield trials, including the 1988-89 MVBN Uniform nurseries. X2944-4 was chosen over X2944-16 primarily because of its superiority in test weight.

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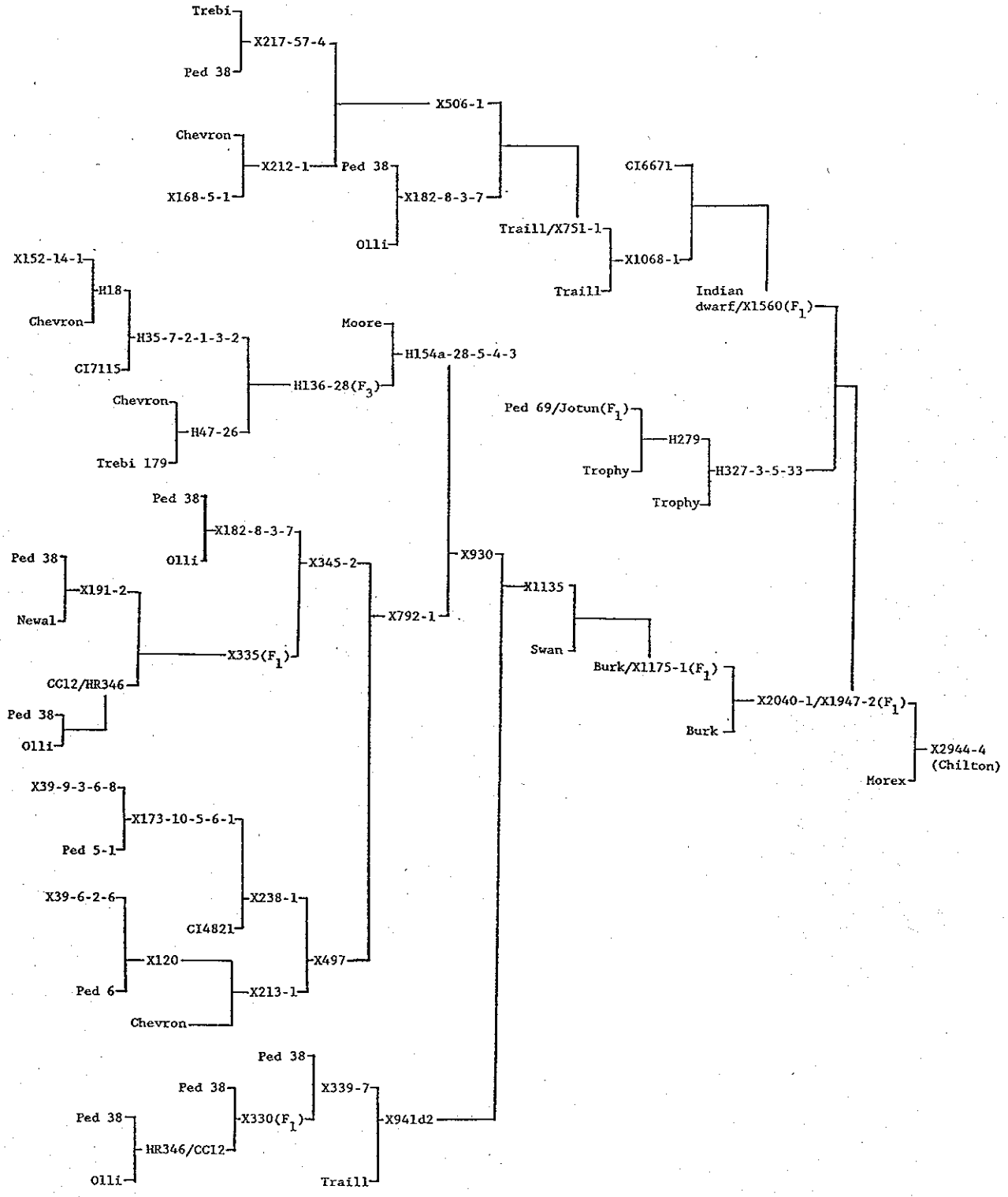
Pedigree of Chilton Spring Barley



3

No variant plants were detected in Chilton prior to the release of Foundation Seed in March, 1990. The field of breeder seed that was grown at the Arlington Experimental Farm in 1988 was inspected on numerous occasions by M.A. Brinkman and personnel from the Foundation Seedstocks Program, and the 15-acre Foundation seed production field grown on the Marvin Stiemke farm near Arlington in 1989 was inspected at weekly intervals during much of the barley growing season. Chilton is considered to be stable for all phenotypic and genotypic plant traits.

Approval for the release of Foundation Seed of Chilton spring barley was granted by the Director of the Wisconsin Agricultural Experiment Station on February 16, 1990. Certified Seed of Chilton will be available for planting by farmers in the spring of 1991.

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EXHIBIT B: NOVELTY STATEMENT

Chilton can be differentiated from other spring barley cultivars primarily on the basis of agronomic and kernel traits. Phenotypically in field nurseries Chilton is similar to Mazen, Morex, and Robust. Chilton most closely resembles Morex because it is virtually the same as Morex in heading date and plant height (see Table 9 in Exhibit D). It is also virtually identical to Morex in reaction to leaf rust (Table 1, Exhibit D), stem rust (Table 7, Exhibit D), powdery mildew (Tables 1 and 7, Exhibit D), and spot blotch (Table 7, Exhibit D). Chilton appears to be somewhat more resistant to net blotch than Morex (Table 8, Exhibit D). The similarity of Chilton and Morex is not surprising because Morex is a parent of Chilton. However, Morex and Chilton differ substantially in several traits, particularly test weight and straw strength (Table 9, Exhibit D). Chilton has also been consistently higher than Morex in grain yield, protein percentage, and protein yield (Table 9, Exhibit D). Chilton heads about a day earlier and is somewhat taller than Hazen and Robust. Agronomic and disease reaction differences between Chilton and other current Midwestern six-rowed barleys are summarized below:

Current barley variety	Heading date	Plant height	Leaf rust	Stem rust	Powdery mildew	Spot blotch	Test weight	Lodging	Grain yield
Bounty	X	X	X	X			X	X	X
Bowers	X	X	X			X	X	X	X
Excel	X	X					X	X	X
Hazen	X	X	X		X	X	X		
Morex							X	X	X
Robust	X	X	X		X	X		X	X

X = Chilton can be distinguished from a cultivar using the specific trait.

FORM APPROVED: OMB NO. 40-R3822

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK AND SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Barley)

OBJECTIVE DESCRIPTION OF VARIETY

BARLEY *(HORDEUM VULGARE)*

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
Wisconsin Agricultural Experiment Station
(Marshall A. Brinkman, authorized agent)

ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code)*
Agriculture Hall
University of Wisconsin-Madison
Madison, WI 53706

FOR OFFICIAL USE ONLY
PVPO NUMBER
9000204
VARIETY NAME OR TEMPORARY DESIGNATION
Chilton (= X2944-4)

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (i.e. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. GROWTH HABIT:

[1] 1 = SPRING 2 = FACULTATIVE WINTER 3 = WINTER [3] Early Growth: 1 = PROSTRATE 2 = SEMIPROSTRATE 3 = ERECT

2. MATURITY (50% Flowering):

[2] 1 = EARLY (California Mariout) (2) = MIDSEASON (Betzes) 3 = LATE (Frontier) Confirmed-tel. call. by GIT 4 Dec 1992 AAA; Oregon Exh. D.

[2] No. of days *Earlier* than ..... [4]
[1] No. of days *Later* than ..... [8]
} 1 = BETZES 2 = CALIFORNIA MARIOUT 3 = CONQUEST 4 = DICKSON 5 = PIROLINE 6 = PRIMUS 7 = UNITAN 8 = Beacon

3. PLANT HEIGHT (From soil level to top of head):

[4] 1 = SEMIDWARF 2 = SHORT (California Mariout) 3 = MEDIUM TALL (Betzes) 4 = TALL (Conquest)

[0][2] Cm. *Shorter* than ..... [3]
[0][6] Cm. *Taller* than ..... [4]
} 1 = BETZES 2 = CALIFORNIA MARIOUT 3 = CONQUEST 4 = DICKSON 5 = PIROLINE 6 = PRIMUS 7 = UNITAN

4. STEM:

[2] Exertion *(Flag to spike at maturity)*: 1 = 0 - 3 cm. 2 = 3 - 10 cm. 3 = 10 - 15 cm. [1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[0][.5] NO. OF NODES (Originating from node above ground)

[1] Collar Shape: 1 = CLOSED 2 = V-SHAPED 3 = OPEN 4 = MODIFIED CLOSED OR OPEN [1] Shape of Neck: 1 = STRAIGHT 2 = SNAKY 3 = OTHER (Specify) .

5. LEAF:

[1] Basal leaf sheath *(seedling)*: 1 = GLABROUS 2 = PUBESCENT [1] Position of flag leaf *(at boot stage)*: 1 = DROOPING 2 = UPRIGHT

[2] Waxiness: 1 = ABSENT (Glossy) 2 = SLIGHTLY WAXY 3 = WAXY [1][5] MM. WIDTH (First leaf below flag leaf)

[2][1] CM. LENGTH (First leaf below flag leaf) [1] Anthocyanin in leaf sheath: 1 = ABSENT 2 = PRESENT

6. HEAD:

[2] Type: 1 = TWO-ROWED 2 = SIX-ROWED [2] Density: 1 = LAX 2 = ERECT (Not dense) 3 = ERECT (Dense)

[4] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) Parallel [2] Waxiness: 1 = ABSENT (Glossy) 2 = SLIGHTLY WAXY 3 = WAXY

[2] Lateral Kernels Overlap: 1 = NONE 2 = AT TIP 3 = 1/4 - 1/2 OF HEAD [2] Rachis *(Hair on edge)*: 1 = LACKING 2 = FEW 3 = COVERED

7. GLUME:

[3] Length: 1 = 1/3 OF LEMMA 2 = 1/2 OF LEMMA 3 = MORE THAN 1/2 OF LEMMA [2] Hairs: 1 = NONE 2 = SHORT 3 = LONG

[3] Hair covering: 1 = NONE 2 = RESTRICTED TO MIDDLE 3 = CONFINED TO BAND 4 = COMPLETELY COVERED

[3] Awns: 1 = LESS THAN EQUAL TO LENGTH OF GLUMES 2 = EQUAL TO LENGTH OF GLUMES 3 = MORE THAN EQUAL TO LENGTH OF GLUMES

[1] Awn Surface: 1 = SMOOTH 2 = SEMISMOOTH 3 = ROUGH

9000204

8. LEMMA:

[5] Awn: 1 = AWNLESS 2 = AWNLETS ON CENTRAL ROWS, AWNLESS ON LATERAL ROWS 3 = SHORT ON CENTRAL ROWS, AWNLETS ON LATERAL ROWS 4 = SHORT (less than equal to length of spike) 5 = LONG (longer than spike) 6 = HOODED

[2] Awn Surface: 1 = AWNLESS 2 = SMOOTH 3 = SEMISMOOTH 4 = ROUGH

[2] Teeth: 1 = ABSENT 2 = FEW 3 = NUMEROUS

[1] Hair: 1 = ABSENT 2 = PRESENT

[1] Shape of base: 1 = DEPRESSION 2 = SLIGHT CREASE 3 = TRANSVERSE CREASE

[1] Rachilla Hairs: 1 = SHORT 2 = LONG

9. STIGMA:

[2] Hairs: 1 = FEW 2 = MANY

10. SEED:

[2] Type: 1 = NAKED 2 = COVERED

[1] Hairs on Ventral Furrow: 1 = ABSENT 2 = PRESENT

[4] Length: 1 = SHORT (8.0 mm.) 2 = SHORT TO MIDLONG (7.5 - 9.0 mm.) 3 = MIDLONG (8.5 - 9.5 mm.) 4 = MIDLONG TO LONG (9.0 - 10.5 mm.) 5 = LONG (10.0 mm.)

[2] Wrinkling of hull: 1 = NAKED 2 = SLIGHTLY WRINKLED 3 = SEMIWRINKLED 4 = WRINKLED

[1] Aleurone Color: 1 = COLORLESS (White or Yellow) 2 = BLUE

[0][3] PERCENT ABORTIVE

[3][3] GMS. PER 1000 SEEDS

11. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[2] SEPTORIA	[0] NET BLOTCH	[1] SPOT BLOTCH	[1] POWDERY MILDEW
[0] LOOSE SMUT	[0] BACTERIAL BLIGHT	[0] COVERED SMUT	[0] FALSE LOOSE SMUT
[2] STEM RUST	[1] LEAF RUST	[0] SCAB	[2] SCALD
[0] AY	[0] BSMV	[2] BYDV	[ ] OTHER (Specify)

12. INSECT: (0 = Not tested, 1 = Susceptible, 2 = Resistant)

[0] GREEN BUG	[0] ENGLISH GRAIN APHID	[0] CHINCH BUG	[0] ARMYWORM
[0] GRASS HOPPERS	[0] CEREAL LEAF BETTLE	[0] OTHER (Specify) _____	

HESSIAN FLY RACES: [0] GP [ ] A [ ] B [ ] C [0] D [ ] E [ ] F [ ] G

13. CHEMICAL (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] DDT [ ] OTHER (Specify) _____

14. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Robust	Seed size	Robust
Leaf size	Morex	Coleoptile elongation	Morex
Leaf color	Morex	Seedling pigmentation	Hazen
Leaf carriage	Morex		

REFERENCES: The following publications may be used as a reference aid for the standardization of character descriptions and terms used in this form:

1. Wiebe, G. A., and D. A. Reid, 1961, Classification of Barley Varieties Grown in the United States and Canada in 1958, Technical Bulletin No. 1224, U.S. Dept. of Agriculture.
2. Reid, D. A., and G. A. Wiebe, 1968, Barley: Origin, Botany, Culture, Winter Hardiness, Genetics, Utilization, Pests, Agriculture Handbook No. 338, U.S. Dept. of Agriculture. pp. 61 - 84.
3. Malting Barley Improvement Association, Milwaukee, Wisconsin, 1971, Barley Variety Dictionary.

COLOR: Nickerson's or any recognized color fan may be used to determine color of the described variety.

EXHIBIT D: ADDITIONAL DESCRIPTION OF THE VARIETY

Chilton is a six-rowed, smooth awned, white aleurone spring barley (Hordeum vulgare L.) that will be marketed as a feed variety. It is superior to all current six-rowed Midwestern varieties in test weight and protein percentage. It has also produced high grain yields and has had excellent lodging resistance scores in Wisconsin tests. Chilton is an early heading variety that has had adequate or better disease protection in Wisconsin testing locations. Performance summaries of Chilton (X2944-4) are contained in Tables 1 through 9. A copy of the Release Notice for Chilton follows Table 9.

9000204

Exhibit D Chilton Barley

TABLE 1. YIELD, AGRONOMIC AND DISEASE DATA FOR BARLEY VARIETIES AND SELECTIONS GROWN IN PERFORMANCE TRIALS AT MADISON, WISCONSIN, 1985. (FOUR ROW PLOTS, 10 FEET LONG, FOUR REPLICATIONS) CHARMANY FIELD 4S.

REPS OF DATA	4	4	4	4	4	2	3	1	1
VARIETY OR SELECTION	YIELD BU/A	RANK	BU. WT. LBS.	HEAD DATE JUNE	HT. IN.	SNAP BACK 0-10	AG-TRON	LATE LODG PRCT	MIL-DEW	LEAF RUST PRCT
YIELD L.S.D. .05 = 12.87 BU/A										
START 22 ENTRIES GROWN IN EXPERIMENTAL FARMS TRIALS										
BOWERS	71.1	(45)	48.7	12.0	35.5	6.9	36.0	56.7	5.0	40.0
BUSCH 2	72.8	(41)	48.8	7.0	37.0	6.9	52.5	35.7	40.0	65.0
GLENN	70.8	(46)	49.8	8.5	34.5	7.0	52.0	18.7	70.0	60.0
HAZEN	80.2	(24)	49.9	9.7	37.7	7.1	57.5	3.7	45.0	60.0
MOREX	83.8	(12)	49.3	8.0	35.7	6.9	47.5	15.0	80.0	60.0
ROBUST	63.9	(58)	50.2	9.2	38.0	7.1	42.0	35.0	30.0	70.0
MINN M46	75.8	(28)	50.4	9.0	36.2	7.1	44.0	8.0	60.0	80.0
X2372-1	75.4	(29)	52.4	8.5	35.2	6.7	56.5	13.3	50.0	70.0
X2603-1	68.0	(51)	49.3	11.7	40.7	6.6	49.5	45.0	40.0	40.0
X2665-1	61.3	(60)	49.8	8.8	36.0	7.1	54.0	14.0	60.0	60.0
X2672-2	74.0	(34)	49.5	9.0	37.5	6.9	55.5	19.3	60.0	25.0
X2672-3	80.9	(21)	50.2	8.8	38.2	7.1	44.0	46.0	75.0	20.0
X2674-4	73.4	(37)	49.1	8.8	36.0	7.0	51.0	37.7	15.0	75.0
X2705-4	51.3	(64)	48.5	9.7	38.7	7.0	46.5	38.0	70.0	50.0
X2705-7	72.6	(42)	48.0	9.0	38.7	6.8	47.0	15.7	90.0	40.0
X2705-8	63.8	(59)	49.2	9.5	37.2	7.1	48.0	14.7	90.0	40.0
X2860-2	87.4	(7)	53.3	12.7	35.2	6.8	43.0	19.3	5.0	8.0
X2860-3	92.9	(1)	54.0	12.5	35.7	6.9	40.5	12.0	2.0	5.0
X2911-2	74.8	(31)	50.5	11.7	37.5	7.1	48.5	11.7	25.0	20.0
X2911-4	72.1	(43)	49.3	11.5	38.0	7.2	52.0	21.7	70.0	15.0
TB79202	81.9	(15)	49.1	10.0	38.5	6.8	50.0	25.3	10.0	40.0
TB82092	88.8	(6)	48.5	12.0	39.0	6.9	41.5	26.7	.0	15.0
START 7 (OF 14) ENTRIES IN THE UNIFORM MISSISSIPPI VALLEY NURSERY										
BARBLESS	65.0	(57)	45.4	12.2	43.8	5.8	34.5	83.3	.0	10.0
LARKER	70.4	(47)	47.7	9.0	35.5	6.3	45.0	61.7	50.0	40.0
MINN M47	81.9	(16)	49.7	9.7	35.5	7.2	48.0	4.3	65.0	70.0
MINN M49	81.4	(19)	48.5	9.5	31.5	7.3	49.5	1.0	90.0	25.0
MINN M50	81.5	(18)	49.1	10.0	36.5	7.0	60.5	24.7	50.0	70.0
ND7309	91.8	(2)	47.7	10.0	36.2	7.3	54.5	2.7	95.0	40.0
ND7369	59.1	(62)	49.0	8.8	33.5	7.1	57.5	14.7	40.0	50.0

(CONTINUED ON NEXT PAGE)

Exhibit D Chilton Barley 9000204

TABLE 1. CONTINUED

REPS OF DATA	YIELD		BU. WT.	HEAD DATE	HT.	SNAP BACK	AG- TRON	LATE LODG	MIL -DEW	LEAF RUST
VARIETY OR SELECTION	BU/A	RANK	LBS.	JUNE	IN.	0-10		PRCT		PRCT
	4		4	4	4	4	2	3	1	1
START 35 ENTRIES GROWN ONLY IN THE MADISON NURSERY										
AZURE	84.3	(10)	48.0	9.7	36.5	6.9	46.0	18.3	55.0	70.0
MINN M78-228	83.9	(11)	49.5	9.7	25.5	8.4	40.5	2.3	99.0	90.0
X2483-2-1	68.0	(52)	50.2	11.2	35.2	7.0	53.0	39.3	15.0	8.0
X2668-5	68.1	(50)	47.7	8.2	34.7	6.8	48.0	46.7	50.0	40.0
X2684-1	66.5	(55)	50.6	9.7	37.7	6.9	50.0	48.3	35.0	20.0
X2705-3	73.1	(40)	49.1	9.0	37.2	7.0	50.0	9.7	65.0	70.0
X2840-2	66.5	(56)	48.8	12.5	38.7	6.9	53.5	41.0	40.0	35.0
X2865-3	80.5	(22)	47.4	9.0	37.2	6.9	46.5	34.0	75.0	18.0
X2911-5	74.5	(32)	49.6	12.2	37.2	7.1	54.0	40.0	80.0	5.0
X2911-6	73.3	(38)	49.4	12.0	36.7	7.1	54.0	48.3	90.0	8.0
X2911-8	81.9	(17)	49.5	11.2	38.0	7.0	53.0	31.7	5.0	1.0
X2916-2	89.7	(4)	49.8	9.0	42.7	6.7	49.5	26.7	80.0	18.0
X2916-3	82.0	(14)	49.4	9.5	41.2	6.6	53.5	35.0	60.0	15.0
X2917-3	76.1	(27)	48.9	5.0	41.2	6.8	40.0	45.0	65.0	25.0
X2941-2	77.0	(25)	51.2	9.2	42.0	6.5	62.5	39.3	8.0	15.0
X2941-3	76.6	(26)	51.6	9.5	44.2	6.7	61.5	29.0	5.0	25.0
X2941-4	80.3	(23)	51.1	8.8	40.0	6.8	52.0	63.3	2.0	40.0
X2941-7	52.6	(63)	48.8	9.7	42.5	6.6	50.5	76.7	95.0	15.0
X2941-9	73.9	(36)	51.1	9.0	44.7	6.5	62.0	40.0	60.0	40.0
BOWMAN	86.9	(9)	53.1	8.2	31.7	7.1	57.0	5.3	15.0	50.0
X2944-2	69.3	(48)	49.4	9.0	36.5	7.1	54.0	41.7	70.0	40.0
→ X2944-4	89.3	(5)	51.0	8.5	39.2	7.1	55.0	4.7	60.0	60.0
X2944-8	69.1	(49)	48.9	5.0	38.5	6.8	50.5	59.0	50.0	80.0
X2944-9	73.3	(39)	49.5	5.2	38.7	6.8	63.0	37.3	75.0	30.0
X2944-16	90.4	(3)	49.9	9.0	37.5	7.0	65.5	22.7	40.0	75.0
X2944-20	67.4	(53)	51.7	9.5	36.5	6.9	55.0	45.0	70.0	60.0
X2945-4	87.4	(8)	50.0	11.2	37.0	7.3	45.0	16.0	50.0	16.0
X2963-1	74.4	(33)	50.0	9.2	34.7	7.1	43.0	18.0	70.0	5.0
X2968-2	74.0	(35)	49.8	8.0	35.7	7.1	60.5	17.7	80.0	3.0
X2968-3	81.2	(20)	49.7	8.5	37.5	7.1	64.0	11.0	85.0	8.0
X2968-4	83.2	(13)	49.7	6.5	36.0	7.0	55.5	23.3	85.0	2.0
X2971-1	66.6	(54)	49.1	6.5	39.0	6.4	56.0	41.7	70.0	12.0
X2976-1	75.4	(30)	50.7	9.0	40.0	6.9	57.0	20.7	95.0	20.0
X2976-2	71.9	(44)	50.9	9.0	37.5	7.0	56.0	5.3	90.0	15.0
X2978-2	60.1	(61)	48.2	7.5	35.0	6.4	56.0	26.7	10.0	60.0
AVERAGE	75.3		49.7	9.4	37.4	6.9	51.3	28.7	52.8	36.8

PLANTING DATE APRIL 19, 1985 HARVEST DATE JULY 24-25, 1985

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Exhibit D Chilton Barley 9000204

Table 2. Performance of 24 barleys at Ashland, Chilton, Lancaster, and Marshfield in 1986.

Genotype	Grain Yield	Bushel Weight	Head Date	Height	Lodging
	bu/a	lb/bu	June	in	%
Bowers	67.9	45.1	17.7	29.9	43
Bowman	64.6	49.0	15.1	28.2	59
Glenn	61.9	45.2	14.0	30.6	43
Hazen	68.1	46.6	15.9	31.2	53
Morex	60.9	44.8	15.6	32.4	45
Robust	68.4	46.8	16.9	31.3	36
Minn M47	67.7	47.0	16.1	28.8	36
ND7309	56.7	43.0	16.4	30.5	44
Bounty	69.6	44.9	17.1	31.2	48
TB82092	62.9	45.0	17.6	31.6	40
X2665-1	57.2	45.7	15.1	31.7	54
X2672-2	64.4	45.2	15.6	32.2	40
X2674-4	57.5	45.2	15.4	30.9	42
X2705-3	61.7	45.7	16.0	30.8	44
X2705-7	60.1	45.4	16.2	31.6	42
X2860-2	57.7	48.8	18.6	29.6	48
Chopper	62.2	48.6	18.6	29.3	52
X2911-2	63.9	46.5	17.1	30.1	38
X2911-8	64.4	46.5	17.4	31.2	40
X2944-4	62.7	47.2	14.1	33.1	39
X2944-16	62.9	46.3	14.4	32.2	46
X2945-4	64.0	46.4	16.5	30.8	43
X2968-3	64.8	46.9	14.6	31.9	40
X2968-4	61.0	46.4	13.5	31.1	37
Mean	63.1	46.2	16.1	31.0	44
Locations	4	4	2	4	1

Exhibit D Chilton Barley 9000204

Table 3. Performance of 20 barleys at Arlington, Ashland, Chilton, Lancaster, and Marshfield in 1987.

Variety or selection	Grain yield bu/a	rank	Test weight lb/bu	rank	Head date June	Height in	Ripe date July	Lodging %	Protein %
No. loc.	5		5		4	4	1	2	1
Azure	56.2	3	44.4	16	12.4	28.1	23.5	35	14.0
Bounty	54.7	7	44.0	20	12.7	27.9	25.0	31	13.6
Bowers	56.0	4	44.4	16	12.8	27.5	25.2	24	13.7
Bowman (2R)	55.7	5	48.0	1	11.1	26.0	24.2	24	15.6
Chopper (2R)	53.7	10	47.1	2	13.6	26.9	29.7	48	14.6
Glenn	51.5	14	44.2	18	10.2	27.3	25.8	10	14.9
Hazen	57.5	1	45.0	10	11.8	27.1	26.7	22	13.9
Morex	53.9	9	44.6	15	9.8	28.2	22.0	39	14.5
Robust	53.0	12	45.9	6	11.8	22.7	25.0	14	13.4
Minn M47	50.7	15	45.8	7	11.4	26.3	28.3	16	14.6
X2672-2	52.4	13	44.9	12	11.4	28.8	27.0	19	14.4
X2705-3	49.0	19	45.2	8	11.4	28.3	25.2	11	15.2
X2860-2 (2R)	56.7	2	45.9	4	13.3	27.6	25.8	54	14.5
X2911-2	49.8	17	44.7	14	12.1	28.9	27.2	11	14.5
X2911-8	47.1	20	45.0	11	12.6	27.7	26.7	16	14.1
X2944-4	54.6	8	46.5	3	10.3	28.6	24.8	17	15.3
X2944-16	55.0	6	45.9	4	10.8	28.3	26.0	12	14.6
X2945-4	49.9	16	44.2	18	12.6	26.8	28.5	16	14.4
X2968-3	53.2	11	44.9	12	11.6	27.1	28.8	6	14.5
X2968-4	49.3	18	45.2	8	10.5	26.5	26.0	9	15.0
Average	53.0		45.3		11.7	27.6	26.1	22	14.7

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Exhibit D Chilton Barley

Table 4. Grain yields (bu/a) of 13 barleys in Wisconsin yield trials in 1987.

Variety or selection	Arlington			Chilton						
	Drill plots	Rod rows	Ashland	Short plots	Long plots	Lanc	Msn	Marsh	Racine	Average
Bowers	84.3	64.4	41.3	71.5	72.4	66.7	19.3	36.2	55.0	56.8
Glenn	70.0	43.9	37.4	83.0	86.8	57.6	13.7	35.7	52.0	53.3
Hazen	85.9	53.8	39.8	93.9	78.7	60.7	19.7	39.5	63.4	59.5
Morex	83.7	49.0	38.6	90.3	73.3	56.9	28.4	34.5	50.8	56.2
Robust	78.6	52.3	40.3	80.2	69.4	61.1	26.7	30.9	51.9	54.6
Minn M47	78.3	46.6	34.0	86.6	79.2	57.5	19.5	28.6	51.0	53.5
TB79202	91.2	48.5	40.3	74.9	77.0	64.0	30.0	45.7	52.1	58.2
X2672-2	81.8	61.8	37.4	76.0	69.4	54.5	40.8	32.2	59.0	57.0
X2860-2	77.3	54.1	39.2	91.6	92.5	56.5	35.7	41.9	59.2	60.9
X2860-3	72.7	48.1	28.7	93.0	90.8	58.6	35.0	40.0	58.2	58.3
X2944-4	81.1	59.8	37.4	84.1	76.6	60.1	34.3	31.7	59.2	58.3
X2944-16	86.0	59.4	36.5	77.7	92.6	65.9	30.7	35.5	50.0	59.3
X2945-4	85.1	40.9	30.7	77.5	79.4	62.1	26.6	38.0	53.0	54.8
Average	82.3	52.5	37.0	83.1	79.8	60.2	27.7	36.2	55.0	57.0

9000204

Exhibit D Chilton Barley

Table 5. Performance of 13 barleys in Wisconsin yield trials in 1987.

Variety or selection	Grain yield bu/a	Test wt lb	Head date June	Height in	Lodging %	BYD 0-9	Prot %
No. loc.	9	8	5	7	4	1	2
Bowers	56.8	44.6	11.8	28.5	20	3.3	11.1
Glenn	53.3	44.1	9.4	28.2	14	4.0	12.0
Hazen	59.5	44.6	10.9	28.3	18	2.0	11.7
Morex	56.2	44.6	8.9	29.5	31	4.0	10.2
Robust	54.6	45.7	11.0	28.9	15	3.3	10.2
Minn M47	53.5	45.6	10.6	27.6	17	3.7	10.1
TB79202	58.2	42.8	11.6	29.4	24	3.0	10.0
X2672-2	57.0	44.5	10.4	29.9	19	4.0	10.0
X2860-2	60.9	46.9	12.7	27.9	34	3.7	10.9
X2860-3	58.3	47.1	13.0	27.7	29	3.7	10.7
X2944-4	58.3	45.9	9.5	29.9	16	4.3	10.2
X2944-16	59.3	45.7	9.9	29.1	15	1.7	10.0
X2945-4	54.8	44.2	11.4	28.6	18	4.3	10.2
Average	57.0	45.1	10.9	28.7	21	3.5	10.6

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Exhibit D Chilton Barley

Table 6. Performance of 22 barleys at Ashland, Chilton, Lancaster, Madison, Marshfield, and Racine in 1988.

Variety or selection	Grain yield bu/a	Grain yield rank	Test wt lb/bu	Head date June	Height in	Ripe date July	Grain protein %
No. loc.	6		6	4	6	1	1
Azure	38.4	17	43.0	11.0	25.4	20.3	14.0
Bounty	36.9	21	40.7	13.0	25.9	24.0	13.8
Bowers	41.4	9	41.6	12.4	24.7	20.3	14.2
Bowman (2R)	45.4	1	47.5	10.4	24.4	23.0	15.4
Chopper (2R)	38.2	18	46.1	13.5	23.2	23.3	16.4
Hazen	43.0	5	43.6	11.4	25.1	22.8	15.7
Morex	41.8	8	42.9	10.9	26.2	19.3	15.8
Robust	40.3	11	43.5	10.8	24.3	21.8	14.0
Minn M47	39.1	15	43.5	10.7	24.2	19.3	14.1
Minn M52	43.0	5	43.2	10.3	23.9	20.0	14.8
ND7309	37.0	20	41.4	12.1	24.5	20.3	15.0
X2838-1	41.1	10	43.4	11.8	25.0	20.3	14.5
X2860-2 (2R)	41.6	7	45.9	13.0	23.3	21.3	15.7
X2944-4	44.2	2	45.1	10.6	26.0	19.3	16.3
X2944-16	43.1	4	43.3	11.5	25.2	19.8	15.6
X2968-3	36.4	22	43.5	11.0	25.2	21.0	14.2
X3008-1	43.9	3	43.9	9.3	25.4	20.8	15.7
X3035-2	40.2	12	42.7	10.4	27.7	23.8	16.5
X3035-3	39.6	13	43.0	10.4	27.8	22.0	16.0
X3035-6	39.1	15	43.0	11.3	26.7	20.5	16.3
X3035-10	37.7	19	41.8	11.1	26.0	20.5	14.9
X3039-15	39.6	13	42.9	10.8	25.6	21.5	16.1
Average	40.5		43.5	11.3	25.2	21.1	15.2

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Exhibit D Chilton Barley

Table 7. Performance of six-rowed barleys at Arlington, Ashland, Chilton and Lancaster, Wisconsin in 1989.

Genotype	Grain yield bu/a	Test wt lb	Prot %	Prot yield lb/a	Head date June	Ripe date Aug	Ht in	Lodg %	Stem rust 0-9	Spot blotch 0-9	Powdery mildew 0-9
No. tests	5	5	4	5	4	1	5	4	1	1	1
Bounty	67.3	44.2	13.6	439	21.8	9.8	33.1	27	5	4	1
Bowers	74.2	46.1	13.6	484	21.1	11.3	33.2	40	1	7	1
Hazen	74.2	46.9	13.8	492	21.2	9.3	33.6	13	1	3	5
Morex	67.7	45.0	14.3	465	20.3	7.5	34.9	35	1	5	2
Robust	67.4	46.8	14.1	455	22.0	10.5	33.1	22	5	8	7
X2944-4	74.1	48.1	14.7	523	20.9	5.8	34.4	5	1	5	2

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Exhibit D Chilton Barley

Table 8. Performance of barleys that were entered in the Mississippi Valley Barley Nursery (Uniform) in 1988 and 1989.

Entry	Grain yield bu/a	Grain yield rank	Test wt lb	Head date June	Height in	Lodging %	Net blotch 0-9
No. tests	14		9	13	13	3	4
Barbless	62.3	11	45.7	20.2	31.7	34	2.5
Larker	61.2	12	47.2	18.4	29.7	26	3.6
Morex	64.6	9	47.3	17.9	30.2	14	3.5
Robust	67.6	4	48.4	19.1	29.4	5	1.9
Minn M52	71.3	1	47.2	18.9	27.2	8	2.9
B1602	68.4	2	47.9	19.6	29.8	7	3.8
B1603	63.5	10	47.3	18.1	27.6	13	2.6
Minn M57	65.8	8	47.7	19.2	28.5	4	2.6
6B84-2912	66.2	7	46.2	20.3	29.0	7	2.1
Minn M59	66.7	6	47.9	19.5	29.8	5	2.9
X2944-4	67.6	4	48.6	18.3	30.9	7	2.4
X2944-16	68.1	3	46.5	18.6	30.0	15	3.7
Mean	66.1		47.3	19.0	29.5	12	2.9

9000204

Exhibit D Chilton Barley

Table 9.

PERFORMANCE OF SIX-ROWED BARLEYS IN WISCONSIN TRIALS, 1985-89.

VARIETY	GRAIN YIELD BU/A	TEST WEIGHT LB/BU	GRAIN PROTEIN %	PROTEIN YIELD LB/A	HEAD DATE JUNE	HEIGHT IN	LODGING %
BOUNTY	57.5	43.2	13.2	364	16.3	30.0	31
BOWERS	58.9	44.4	13.2	373	16.2	29.2	35
CHILTON	60.2	46.6	14.3	413	14.3	31.0	14
HAZEN	60.6	45.4	13.5	393	15.2	29.8	19
MOREX	56.9	44.6	13.9	380	14.3	30.8	30
ROBUST	56.2	45.8	13.7	370	15.6	29.6	18
NO. TESTS	25	24	10	25	13	20	9

University of Wisconsin-Madison

9000204

Department of Agronomy
1575 Linden Drive
Madison, Wisconsin 53706
608-262-1390

DATE: February 12, 1990

TO: Experiment Station Directors, Department Chairpersons, Barley Breeders, Foundation Seed Managers, Crop Improvement Managers, and NCS-1 Committee Representatives in the North Central States.

FROM: M.A. Brinkman and R.A. Forsberg

SUBJECT: Release of Wisconsin Barley Selection X2944-4 with the Name "Chilton"

The Wisconsin Agricultural Experiment Station plans to release Wisconsin barley selection X2944-4 (Chilton) to Certified seed growers for planting in the spring of 1990. Chilton is the county seat of Calumet County in eastern Wisconsin where barley is a popular crop. We expect to announce the release of Chilton on or about February 16, 1990. Tentative release plans were announced in a letter dated February 6, 1989.

Chilton is a six-rowed, smooth-awned feed barley that has produced high yields of grain with high test weight and protein percentage in Wisconsin tests. Data summaries for 1985-89 are enclosed (Tables 1-4).

The pedigree of Chilton is X2040-1/X1947-2//Morex. Preliminary yield testing of Chilton was initiated in 1984, and advanced testing was initiated at Madison in 1985. Chilton was evaluated in statewide tests in 1986-89, and was included in the Mississippi Valley Barley Nursery in 1988 and 1989. It is similar to Morex in maturity, heading 1 to 3 days earlier than Hazen, Robust, and Bowers. In 1985-89 performance trials it has trailed only Hazen in grain yield (by 0.4 bu/a), and has ranked higher than all other six-rowed cultivars in test weight, protein percentage, and protein yield. Although slightly taller than average in height, Chilton has very good straw strength. Barley diseases were not prevalent in Wisconsin nurseries in the late 1980's, but where diseases did occur Chilton's pattern of reaction indicates that it has good overall disease resistance. Chilton is not intended for malting.

Chilton ranked 4th of 12 in grain yield and 1st of 12 in test weight in the combined 1988-89 Uniform nursery summary. The only entry that exceeded Chilton's grain yield by more than 1 bu/a in the Uniform nursery, Minn M52, has not performed as well as Chilton in Wisconsin tests.

The 1989 increase field near Arlington, Wisconsin yielded 87 bu/a, so we have sufficient seed available for distribution. Please direct your requests by February 22, 1990 to Mr. Patrick J. LeMahieu, Director, Wisconsin Foundation Seeds, Room 562 Moore Hall, 1575 Linden Drive, Madison, WI 53706 (Telephone: 608-262-1376).

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In addition to Plant Variety Protection (via seed certification), the following specifications accompany the release of Chilton barley:

1. There will be only three classes of seed -- Breeder, Foundation, and Certified.

2. The Wisconsin Crop Improvement Association has been delegated authority to license production of the Certified Class of Seed of Chilton, and to serve as the collection agent for a research and development fee.

3. The annual license fee for Chilton barley shall be $25.00

4. A research and development fee of $.25 per bushel will be assessed and collected on the Certified Class of Seed of Chilton at the first point of sale.

5. The Wisconsin Crop Improvement Association may authorize other Crop Improvement Associations or Foundation Seed Organizations to act as sub-licensing and fee-collection agents. To this end, the WCIA will enter into the following licensing or sub-licensing agreements:

   a. A nonfee, permanent agreement with Foundation Seed Organizations in other states.

   b. An annual, sub-licensing agreement with Crop Improvement Associations in other states. These Crop Improvement Associations may then license individual Growers in their respective states.

   c. An annual licensing agreement with individual Wisconsin Seed Growers.

   Please direct inquiries to Mr. Eugene R. Amberson, Manager, Wisconsin Crop Improvement Association, Room 560 Moore Hall, 1575 Linden Drive, Madison, WI 53706. (608-262-0167).

6. License fees collected in another state may be retained by the licensing agent for that state.

7. Research and development fees collected by another state will be shared 50:50, with the 50% retained by that state to be used for research and development as specified by the Director of the State Agricultural Experiment Station, the other 50% to be returned to the Wisconsin Crop Improvement Association by September 1 of each year.

8. The Director of Wisconsin's Foundation Seed Program must have in hand a copy of the appropriate signed "license/fee-collection agreement" for Chilton barley prior to the sale of Breeder Seed or Foundation Seed of Chilton barley to a Foundation Seed Organization or an individual Seed Grower.

9000204

Table 1. Performance of six-rowed barleys at Arlington, Ashland, Chilton and Lancaster, Wisconsin in 1989.

Genotype	Grain yield bu/a	Test wt lb	Prot %	Prot yield lb/a	Head date June	Ripe date Aug	Ht in	Lodg %	Stem rust 0-9	Spot blotch 0-9	Powdery mildew 0-9
No. tests	5	5	4	5	4	1	5	4	1	1	1
Bounty	67.3	44.2	13.6	439	21.8	9.8	33.1	27	5	4	1
Bowers	74.2	46.1	13.6	484	21.1	11.3	33.2	40	1	7	1
Hazen	74.2	46.9	13.8	492	21.2	9.3	33.6	13	1	3	5
Morex	67.7	45.0	14.3	465	20.3	7.5	34.9	35	1	5	2
Robust	67.4	46.8	14.1	455	22.0	10.5	33.1	22	5	8	7
X2944-4	74.1	48.1	14.7	523	20.9	5.8	34.4	5	1	5	2

Table 2. Grain yields (bu/a) of six-rowed barleys in Wisconsin trials, 1987-89.

Genotype	Arlington	Ashland	Chilton	Lancaster	Madison	Marshfield	Racine	Mean
No. tests	3	3	3	3	2	2	2	18
Bounty	72.5	39.9	57.8	53.5	44.6	35.2	46.6	51.3
Bowers	79.4	43.6	61.8	55.7	55.8	30.1	55.2	55.4
Hazen	82.1	43.5	68.6	55.4	47.0	31.6	64.8	57.5
Morex	71.7	42.4	63.4	53.8	47.6	31.0	52.9	53.2
Robust	72.5	43.0	55.0	56.5	46.1	27.0	57.4	52.3
X2944-4	75.3	45.0	61.4	56.3	52.7	28.8	67.0	56.2

PERFORMANCE OF SIX-ROWED BARLEYS IN WISCONSIN TRIALS, 1985-89.

VARIETY	GRAIN YIELD BU/A	TEST WEIGHT LB/BU	GRAIN PROTEIN %	PROTEIN YIELD LB/A	HEAD DATE JUNE	HEIGHT IN	LODGING %
BOUNTY	57.5	43.2	13.2	364	16.3	30.0	31
BOWERS	58.9	44.4	13.2	373	16.2	29.2	35
CHILTON	60.2	46.6	14.3	413	14.3	31.0	14
HAZEN	60.6	45.4	13.5	393	15.2	29.8	19
MOREX	56.9	44.6	13.9	380	14.3	30.8	30
ROBUST	56.2	45.8	13.7	370	15.6	29.6	18
NO. TESTS	25	24	10	25	13	20	9

Table 4. Performance of barleys that were entered in the Mississippi Valley Barley Nursery (Uniform) in 1988 and 1989.

Entry	Grain yield bu/a	Grain yield rank	Test wt lb	Head date June	Height in	Lodging %	Net blotch 0-9
No. tests	14		9	13	13	3	4
Barbless	62.3	11	45.7	20.2	31.7	34	2.5
Larker	61.2	12	47.2	18.4	29.7	26	3.6
Morex	64.6	9	47.3	17.9	30.2	14	3.5
Robust	67.6	4	48.4	19.1	29.4	5	1.9
Minn M52	71.3	1	47.2	18.9	27.2	8	2.9
B1602	68.4	2	47.9	19.6	29.8	7	3.8
B1603	63.5	10	47.3	18.1	27.6	13	2.6
Minn M57	65.8	8	47.7	19.2	28.5	4	2.6
6B84-2912	66.2	7	46.2	20.3	29.0	7	2.1
Minn M59	66.7	6	47.9	19.5	29.8	5	2.9
X2944-4	67.6	4	48.6	18.3	30.9	7	2.4
X2944-16	68.1	3	46.5	18.6	30.0	15	3.7
Mean	66.1		47.3	19.0	29.5	12	2.9

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EXHIBIT E: BASIS OF APPLICANT'S OWNERSHIP

This is to certify that I have been appointed the agent by the applicant. The applicant, the Wisconsin Agricultural Experiment Station, is the sole owner of Chilton barley.

Marshall A. Brinkman

Marshall A. Brinkman
Department of Agronomy
University of Wisconsin-Madison
1575 Linden Drive
Madison, WI 53706